

REMARKS/ARGUMENTS

After the foregoing Amendment, Claims 1, 7, 8, 12-14, 16-18, 20, 21, and 29-49 are currently pending in this application. Claims 1, 14, 16, 29, 33, 36 and 39 have been amended for clarification purposes.

Applicants submit that no new matter has been introduced into the application by these amendments.

Claim Rejections - 35 USC §103(a)

Claims 1, 7-8, 13-14, 16-17 and 20

Claims 1, 7-8, 13-14, 16-17, 20, 29-38 and 43-48 are rejected under 35 U.S.C. §103(a) as being unpatentable over Yu et al (U.S. 7,385,572) in view of Yuyama et al. (U.S. 6,069,676). Applicants respectfully disagree.

Independent claims 1, 14, 16, 29, 33, 36 and 39 have been amended in view of the discussions with the Examiner during the Examiner Interview. Applicants' have clarified that the photodetector is non-removably flush mounted to the surface of the transparent substrate that is opposite the light emitting devices. In particular, the detector side of the photodetector faces the light emitting devices. The photodetector mounting geometry permits detection of waveguided light from the light emitting devices and also minimizes the effect of stray or external light on the photodetector. As discussed below, Yu teaches away from Applicants'

photodetector mounting geometry, provides no motivation for combining with Yuyuma and even if a combination was permissible, the alleged combination frustrates the purposes or teachings of Yu. Moreover, Yu is non-functional as disclosed below.

As stated in the Office Action, Yu fails to disclose “arranging the photodetector on the lower surface of the transparent surface.” The Office Action attempts to combine Yu with Yuyuma to overcome this deficiency. Applicants respectfully disagree.

Yu in view of Yuyuma in fact teaches away from the elements recited in the amended independent claims. First, Figure 7 of Yu shows a photosensor 72 within the substrate 742, where the detector side faces the user side of the device 70. The photodetector in this embodiment detects waveguided light traveling within the transparent device. This photodetector placement is subject to stray light hitting the device 70 and effecting the light measurements. Second, Figure 11 of Yuyuma is a light box device or a light source that uses a photodetector to detect line of sight light. The Yuyuma approach was already known by Yu for line of sight light detection as shown in Figures 5 and 6. In these embodiments, an external photosensor device is used to detect light from the light emitting device. This external photosensor device is removed after calibration as it would interfere or block the light during actual use of the electronic device. Yu, therefore, knew about

light of sight approaches as discussed in Yuyuma but did not use it for embedded photodetector embodiments that detected waveguided light since any embedded photodetectors on the opposite side of the light emitting devices would not be removable and would interfere with light emissions. That is, the Yuyuma approach was purposely dismissed and/or not used by Yu for the Yu waveguided embodiments. Therefore, there is no motivation to combine Yu with Yuyuma and in fact, Yu necessarily teaches away from the use of techniques based on line of sight detection.

In addition, Yu specifically avoids placement of any circuits or devices on the user side. Figures 5, 6, and 10 clearly show embodiments where the devices are removed after calibration and not present during actual or operational use. Figures 7 and 8 provide further evidence by placing embedded photodetectors inside the substrate and away from the user side. As such, Yu teaches away from flush mounting a non-removable photodetector on a surface opposite the light emitting devices.

Moreover, during the discussion of the fabrication process for the embodiment shown in Figure 7, Yu clearly indicates a desire not to place a photodetector on the surface opposite the light emitting devices. In particular, in column 12, lines 37-53, Yu discusses the fabrication techniques for embedding a photodetector inside the transparent substrate. Yu states that a polishing

operation may be used to remove silicon material lying outside the recession within the substrate. However, the polishing is not important (as implied by the used of the term “may”) as Yu then states “[a] user of the electronic device 70 will see the user side 700.” As shown in Figure 7, the user side 700 and the side that the Yu embedded photodetector is on are opposite sides of the substrate. The user side 700 would not be affected by the placement of the embedded photodetector in the substrate as shown in Figure 7. Placement of a photodetector as recited in claim 1 would be on the user side 700. This is in direct contravention to the teachings of Yu for detection of waveguided light. Therefore, Yu teaches away from the placement of a flush mounted, non-removable photodetector on a surface opposite the light emitting devices.

Moreover, any alleged combination would frustrate the purpose of Yu. In particular, placement of a flush mounted, non-removable photodetector on a surface opposite the light emitting devices would be in direct contradiction to the embodiments and fabrication techniques discussed in Yu. In particular, as presented above, Yu does not show any indication of wanting to fabricate on the user side surface. Yu clearly indicates a prohibition of placing anything on the user side of the device. Since the modification destroys or frustrates the purpose of Yu of having a clear user side surface, the combination is not proper.

Applicants also believe that at least the Figures 7 and 8 embodiments of Yu that highlight use of the waveguided light are substantially if not completely inoperable. The placement of the protective shield, that is 502, in contact with the waveguiding substrate would necessarily direct any reflected and waveguided light through the protective shield and away from the waveguide and detector 72. As such, detector 72 would measure improper amounts of light due to the diminishment or extinction of the light signal while propagation through the protective shield 502, and the device would provide incorrect compensation.

Applicants believe that claims 1, 7-8, 12-14, 16-17, 20, 29-38 and 43-48 are allowable over the cited prior art of record for the reasons provided herein. Withdrawal of the 35 USC §103(a) rejection of claims 1, 7-8, 12-14, 16-17, 20, 29-38 and 43-48 is respectfully requested.

Claim 18

Claim 18 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yu in view of Yuyama further in view of Cok (U.S. 7,026,697). Applicants respectfully disagree for the reason presented herein. Withdrawal of the 35 USC §103(a) rejection of claim 18 is respectfully requested.

Claims 39-42 and 49

Claim 39 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yu in view of Yuyama further in view of Bawendi et al. (U.S. 6,501,091). Applicants respectfully disagree for the reason presented herein. Withdrawal of the 35 USC §103(a) rejection of claims 39-42 and 49 is respectfully requested.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

Applicant: Bulovic et al.
Application No.: 10/693,022

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application, including claims 1, 7, 8, 12, 14, 16-18, 20, 21, and 29-49, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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Enclosure